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08/999,663	12/18/1997	EVAN GEORGE COLGAN	YO994-065XX	4175

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EXAMINER
PARKER, KENNETH

ART UNIT	PAPER NUMBER
2871	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 08/999,663	Applicant(s) Colgan et al
	Examiner Kenneth Parker	Art Unit 2871

-- The MAILING DATE of this communication appears on the cover she t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-14 and 46-77* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-14 and 46-77* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

Specification

Please note: the specification only claims priority from application 08/803,210 filed 2/21/97. As it does not indicate that it is a continuation of the earlier filed application on which 08/803,210 is a continuing application, the effective filing date of this application is 2/21/97.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 92- 94 and others. In fact, figures 2-4 are completely lacking figure numbers. Correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

1. **Claims 1-14, 46-77 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

The term "frame" has no art meaning that can be applied to the use in the claims. Any pixel electrode has something around the edges, and that something can be construed to be a frame equally to an opaque layer around the edge. A frame doesn't have to be opaque... or does it? Further, some of the claims using the term frame do not have the layer framing any particular thing, in which case the construable meaning is rendered even further indefinite. In claim 47, there is no structural relation between the frame and the rest of the claim, the claim is indefinite for the lack of a structural relation, and the limitation is automatically met by the mere existence of frames somewhere, as the relationship can be anything.

In this application, the term "antireflection film" and the term "antireflection surface" are ambiguous. Although the term antireflection film has an art established meanings, which is a multilayer structure that reduces reflection using interference, it is unclear in this application if it should be construed that way, or if any absorbing layer should be construed to be an antireflection film, as an absorbing layer reduces the reflection of any layer below it.

The term reflector/absorber is indefinite. Does this mean "reflector or absorber", something which both absorbs and reflects, or some relationship which the examiner is not perceiving. These two word used together with a slash defining the relationship has no established meaning, and, as applicant has not provided a definition, is indefinite as there is no way to determine its meaning.

The reflector comprising an antireflection film is indefinite as it is an oxymoron. Applicant can be his or her own lexicographer, however may not use a word in a manner repugnant to its meaning.

In claim 1, the phrase "a plurality of device" is indefinite, as the examiner has no way to determine what kind or combination (if any) of elements need to be present to define a "device". Further, the reference in the claim to "the liquid crystal devices" lacks antecedent basis as no "liquid crystal devices" were preceded that mention in the claim

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

2. Claims 1-3, 7-10, 14, 62- 77 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. Patent Miyawaki et al, US Patent #5,708,486.

Claim 77 is admitted by applicant (page 2 of paper #20). Claim 1 and 3) plurality of (liquid crystal) ***devices*** over mirror over dielectric over semiconductor substrate (figure 1b), electrical circuits in semiconductor substrate coupled to LCDS for placing a voltage across electrode of lcd (col. 4, lines 44- col. 5, lines 41), reflector/absorber layer comprising antireflection layer positioned and patterned with respect to the mirrors for shielding the circuits from ambient light, having edge overlapping edge of mirror to decrease light from passing to semiconductor substrate (see figure 1b), plurality of (liquid crystal) devices over mirror of Ag, Al (col. 2, lines 44-55) over dielectric over semiconductor substrate.

Claim 62-63, 66-68, 73, 75, 77) the plurality of lcd over respective mirrors on dialectic layer on a semiconductor substrate plurality of electrical circuits in semi sub, coupled to LCDs, absorber positions and patterned with respect to said mirrors for shielding the e circuits from ambient light which overlaps edge of mirror, comprising antireflection surface (TiN film),

3. Claims 57-64 and 67-77 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. Patent Kurogane, US Patent #5,652,667.

Claims 57-63 and 67-70, 71 and 77 are admitted by applicant (page 2 of paper #20).

4. Claims 1, 3-10, 14, 46-50, 53-77 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Shintani, US Patent # 5,978,056.

Shintani discloses, relative to the claims as shown below in regard to claims 1,14 and 47 below:

1)

plurality of (liquid crystal) ***devices*** 30 over mirror 8a over dielectric over semiconductor substrate, electrical circuits in semiconductor substrate coupled to LCDS for placing a voltage across electrode of lcd, reflector/absorber layer 51-52 comprising antireflection layer positioned and patterned with respect to the mirrors for shielding the circuits from ambient light, having edge overlapping edge of mirror to decrease light from passing to semiconductor substrate

3) plurality of (liquid crystal) devices over mirror of Ag, Al (col. 6, lines 60-65) over dielectric over semiconductor substrate 1

electrical circuits 2 and 3 in semiconductor substrate coupled to LCDs 30 for placing a voltage across electrode of lcd

reflector/absorber layer 51-52 positioned and patterned with respect to the mirrors for shielding the circuits from ambient light, having edge overlapping edge of mirror to decrease light from passing to semiconductor substrate,

47)

substrate 1, switching elements 2 being formed on said substrate

first electrode 53 connected with switching element and positioned over switching element, storage cap 3 connected with first electrode and under first electrode

optical reflector ***and a frame*** (any region between pixels), first orientation film on optical reflector, second orientation film, LC between orientation films substantially nonconductive optical blocking means 52-52 between first electrode and switching element for blocking light leaking onto switching element comprising anti-reflection film

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 1-14, 46-51, 54-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al, U.S. Patent #5,461,501.

Lacking from the disclosure is the use of alignment layers. As alignment layers were notoriously well known and ubiquitously use for creating appropriate alignment conditions, this feature would not patentably distinguish the claims. The size of the pixel electrode, opening, and capacitance of the capacitors were all well known result effective variables, with the pixel inverse-size trading off resolution vs cost, capacitance trading off holding time vs delay. As it has been Judaically determined that the optimization of a result effective variable is obvious, these features do not patentably distinguish the claims. Any other missing limitations are addressed below in the discussion corresponding to the individual claims.

Sato discloses, relative to the claims:

Re claim 1- shown is plurality of (liquid crystal) ***devices*** 209 over mirror over dielectric over semiconductor substrate 201, electrical circuits in semiconductor substrate coupled to LCDS for placing a voltage across electrode of lcd, reflector/absorber layer comprising antireflection layer (column 10, line 40 - column 11, line 3) positioned and patterned with respect to the mirrors for shielding the circuits from ambient light, having edge overlapping edge of mirror to decrease light from passing to semiconductor substrate (see figures 6, 7, 8 and 10),

Re claim 3- Shown is a plurality of (liquid crystal) devices over mirror of Ag, Al (col. 10 lines 40-45) over dielectric 205 over semiconductor substrate, electrical circuits in semiconductor substrate coupled to LCDs for placing a voltage across electrode of lcd (in 202), reflector/absorber layer positioned and patterned with respect to the mirrors for shielding the

circuits from ambient light, having edge overlapping edge of mirror to decrease light from passing to semiconductor substrate (see figures 6, 7, 8 and 10).

Re claim 47- shown is substrate 201, switching elements being formed on said substrate (listed above), first electrode connected with switching element and positioned over switching element (listed above) , storage cap connected with first electrode 112 and under first electrode 204-206, optical reflector ***and a frame*** 208, first orientation film on optical reflector (listed above), second orientation film (listed above) LC between orientation films (listed above)substantially nonconductive optical blocking means between first electrode and switching element for blocking light leaking onto switching element comprising anti-reflection film (listed above).

Re claim 48)- shown is substrate (listed above), switching elements being formed on said substrate (listed above), first electrode connected with switching element and positioned over switching element (listed above), storage cap connected with first electrode and under first electrode (listed above), optical reflector ***and a frame*** (listed above), first orientation film on optical reflector (listed above), second orientation film (listed above), LC between orientation films 209, substantially nonconductive optical blocking means between first electrode and switching element for blocking light leaking onto switching element comprising anti-reflection surface (listed above).

Claims 50,53, 56-63, 67-70, 75 the features are as described above.

Re claim 64- show is the forming one or more layers of interconnections above the circuits (listed above) forming a dielectric layer over the circuits (listed above) planarizing the dielectric layer (a conventional step for enabling a good metalization coating, and obvious for that reason) forming an absorber layer, (listed above) positioned and patterned (required, as the layer is not continuous) forming a second dielectric layer above the patterned absorber (listed above) forming studs through the second dielectric layer for electrical connection to mirrors (listed above) forming the mirrors overlapping the absorber layer to form a capacitor with respect to the

overlapping mirror to attenuate light traveling between said absorber and mirror, (listed above) forming between selected mirrors (well known for providing even spacing, and obvious for that reason) applying a layer of liquid crystal (listed above) orienting the LCM (obvious for the requirement of liquid crystal to have an orientation (it is typically injected isotopically an then cooled, the cooling step can be considered orienting, and a separate orienting step is required for ferroelectric liquid crystal, well known for high speed) forming a top electrode of the plurality of mirrors to the lcd (listed above) absorber layer comprises an antireflection surface (listed above)

Re claims 14 and 65-shown is the forming one or more layers of interconnections above the circuits (listed above) forming a dielectric layer over the circuits (listed above) planarizing the dielectric layer (listed above) forming an absorber layer, (listed above) positioned and patterned (listed above) forming a second dielectric layer above the patterned absorber (listed above) forming studs through the second dielectric layer for electrical connection to mirrors (listed above) forming the mirrors overlapping the absorber layer to form a capacitor with respect to the (listed above) overlapping mirror to attenuate light traveling between said absorber and mirror, (listed above) forming spacers between selected mirrors (listed above) applying a layer of liquid crystal (listed above) orienting the LCM (listed above) forming a top electrode of the plurality of mirrors to the lcd (listed above) mirrors are AG al or alloys thereof (listed above) 66 plurality of lcd over respective mirrors on dielectric layer on a semiconductor substrate (listed above) plurality of electrical circuits in semi sub, coupled to LCDs, (listed above) light blocking layer and patterned with respect to said mirrors for shielding the circuits from ambient light which overlaps edge of mirror, comprising antireflection surface (listed above)

6. Claims 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shintani et al, U.S. Patent # 5,978,056 in view of Kurogane at al, US patent # 5,652,667, Ueno et al, JP 05-41199 and Sakamoto, JP 3-256025.

These claims add a frame composition along an edge of said first electrode composed of optical blocking insulating material for blocking incident light comprising cadmium telluride blocking insulating material for blocking incident light comprising geranium oxide.
The primary reference discloses the structure with out the shading absorbing layer having an antireflection property. Kurogane, Sakaomoto and Ueno et al each discloses absorbing films which satisfy applicant's use of the word antireflection, teaching that these provide good light blocking. The Ueno et al reference teaches the addition of various Ti compositions, and the Kurogane reference taches cadmium telluride and geranium oxide. Therefore, it would have been obvious, in the device of Sato et al, to provide the light blocking layers of Kurogane including cadmium telluride or geranium oxide (which have the benefit of absorbing IR) to improve the light blocking feature as taught by Kurogane and to absorb IR.

7. Claims 1-14, 46-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al, U.S. Patent # 5,461, 501 in view of Kurogane at al, US patent # 5,652,667, Ueno et al, JP 05-41199 and Sakamoto, JP 3-256025.

These claims add a frame composition along an edge of said first electrode composed of optical blocking insulating material for blocking incident light comprising cadmium telluride blocking insulating material for blocking incident light comprising geranium oxide.

The primary reference discloses the structure with out the shading absorbing layer having an antireflection property. Kurogane, Sakaomoto and Ueno et al each discloses absorbing films which satisfy applicant's use of the word antireflection, teaching that these provide good light blocking. The Ueno et al reference teaches the addition of various Ti compositions, and the Kurogane reference taches cadmium telluride and geranium oxide. Therefore, it would have been obvious, in the device of Sato et al, to provide the light blocking layers of Kurogane including cadmium telluride or geranium oxide (which have the benefit of absorbing IR) to improve the light blocking feature as taught by Kurogane and to absorb IR.

*****Any item marked with (**) is given as official notice.***

Note: Any assertions that an element, practice or relationship was conventional has the incorporated motivations of the benefits of having established supply chains, well understood behavior and manufacturing methodologies.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Parker whose telephone number is **(703) 305-6202.** The fax phone number for this Group is **(703) 308-7722.** Any inquiry of a general nature or relating to the status of this application or preceding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

January 28, 2002

KENNETH ALLEN PARKER
PRIMARY PATENT EXAMINER
GAU 2871